Subsequent births among teenagers in Mexico

Celia Hubert[1]
Aremis Villalobos[2]
Andrés Sánchez[2]
Tonatiuh Barrientos[2]
Filipa De Castro[2]

Abstract

This analysis explores socioeconomic and demographic factors associated with subsequent births during adolescence in Mexico. The Mexican adolescent fertility rates are the highest among OECD countries and about 20% of all teen births are subsequent births. Using 2006, 2009 and 2014 rounds of the National Survey of Demographic Dynamics (ENADID) and logistic and multinomial logistic regression we assess characteristics of adolescents who have subsequent births, single birth or no births during adolescence. We found that education and delay sexual debut decreases the relative risk of having one or more births in adolescence. In contrast, a greater ideal number of children increases the relative risk of being a repeat teen mother. Identifying the characteristics of adolescents who have multiple births in adolescence might help inform policy-making on how to offer evidence-based prevention and care programs for these adolescents.

Introduction

Repeat teen mothers have higher incidence of preterm birth, low infant birth weight, and infant mortality compared to first time teen mothers and first time older mothers.[1–4] Subsequent births during adolescence also increase the risk of depression and dropping out of school and decrease the chance of attaining economic self-sufficiency [4–6] . A high prevalence of repeat adolescent mothers could indicate that teenagers are not fully aware of their sexual and reproductive rights or that they do not have the means to fully exercise their rights.

In Mexico, about 20-25% of teen births are repeat births (births before age 20 to a mother who has one or more children). In addition, about two thirds of these births have an inter-pregnancy interval lower than 27 months which further increases the risks associated with repeat teen pregnancies[7–9]. Over the last decade, the proportion of subsequent births before age 20 has been remarkably stable[10,11]. This tendency highlights the need to identify the factors associated with repeat teen pregnancy as well as the characteristics of women who had more than one birth before age 20. Therefore, we seek to identify the differences between the repeat teen mothers, first time teen mothers and women with no births before age 20, and to assess the factors that are associated with having had a single birth and more than one birth during adolescence.

Data and Methods

We used data from the National Survey of Demographic Dynamics (ENADID, acronym in Spanish), a national household survey with a probabilistic, stratified and multistage cluster sampling design. The ENADID is a periodic survey collected by the National Institute of Statistics and Geography and by the National Population Council (CONAPO, acronym in Spanish) ¿since? 2006. The present study uses data from the 2006, 2009 and 2014 rounds. The sample consists of 27,786 women aged 20 to 24 years old who completed the women's questionnaire.

[1] CONACYT- National Institute of Public Health – Reproductive Health Division
[2] Population Health Research Center, National Institute of Public Health, Mexico.

We performed chi-square tests to determine differences among socio-demographic characteristics between repeat teen mothers, first time teen mothers and women with no births during adolescence. In addition, we used logistic regression to explore factors associated with repeat teen pregnancy compared with first teen pregnancy. We also adjusted a multinomial logistic regression to test associations with the outcome variable, which indicates whether a woman had a single birth, subsequent births or no births during adolescence. We estimated parsimonious stratified models by survey year. We included variables whose bivariate tests had a p-value < 0.25 in the GLM with the exception of access to public health services and contraception variables. This significance level (< 0.25) was used only as a criterion for the initial selection of variables to be included in the first multivariable model because some authors found that a lower level could fail to identify variables that were thought to be important, based on previous research or theoretical assumptions[12]. We excluded marital status, current contraceptive method and health services despite the important bivariate association with our outcome variables due to potential reverse causality. We conducted all analyses using Stata 15.0 and its *svy* suite for analyzing complex survey design data.

Results

Tables 1a, 1b and 1c present the socio-economic characteristics of women by number of births during adolescence in 2006, 2009, and 2014, respectively. Table 1a reveals noticeable differences among the three observed groups of women. There are significant differences in the percentage of ever married/cohabiting women among those with subsequent births (95.6%) compared with those with one (84.3%) or none births (84.1%). Regarding educational attainment, women with more than one birth in adolescence are significantly less educated than their counterparts: only 10.8% of these women attained tertiary education compared to 25.4% of those with one birth and 39.8% of those with no births. The age at first sexual intercourse also presents important differences across groups, women with no birth have a mean age of sexual debut at 18.7 years old compared to 16.6 for those with a single birth, and 15.4 for those with subsequent births. There are also differences in current contraceptive method, a higher percentage of women with subsequent births relied on sterilization (17.2%) compared with those with one birth (8.2%) or none (4.9%). In contrast, more women with no births relied on less effective methods (8.7%) compared with their counterparts with one (5.5%) or more (4.6%) births. Additionally, there are no important differences across groups in the percentage of users of LARCs and no method.

[TABLE 1a]

Table 1b shows the characteristics for women in 2009, like in 2006, most women with subsequent births have been ever married/cohabiting (93.4%). However, among those with no births about 71.3% have been never married/married compared with only 15.9% in 2006. Regarding education, the group of women with subsequent births was the least educated with 85.5% attaining lower secondary or less. Additionally, there is a greater percentage of women with subsequent births using LARCs (41.0%) compared with those with one birth (27,5%) and none (23.2%).

[TABLE 1b]

Overall, we can observe very similar results for 2014 (Table 1c) compared with 2009. However, the educational attainment is higher for all groups compared with previous years, the most remarkable difference is among women with no births who attained tertiary education (43.9%). Finally, it is important to observe the change in health services across the years, in particular regarding access to *Seguro Popular*, a Mexican health program that provides health services for poor people living in marginalized

areas. While in 2006 only 10% of women with subsequent births had access to these services, in 2009, this figure reached 31.9% and by 2014, 63.0% were beneficiaries of these program.

[TABLE 1c]

Table 2 presents the results of the logistic regression on number of births during adolescence comparing women with one birth and those with subsequent births (excluding women with no births). Less education is associated with higher likelihood of subsequent births, in 2009 and 2014. In 2009, women who attained secondary education or less were 7 times more likely to have subsequent births in adolescence compared with those with higher education (RM=6.9 IC95% [2.58, 18.9]) and women with upper secondary education were about 5 times more likely to have more than one birth before age 20 than their college educated counterparts. For each additional year that women delay their sexual debut, the likelihood of having another birth in adolescence reduces about 40% (RM=0.62 for 2006, RM=0.59 for 2009 y RM=0.62 for 2014). In contrast, for each additional ideal number of children, the likelihood of having subsequent births increases (RM=1.37 for 2006, RM=1.28 for 2009 y RM=1.18 for 2014).

[TABLE 2]

Finally, Table 3 shows the results of the multinomial logistic regression, comparing the three groups of women (no births, one birth and more than one birth). There is a significant difference regarding educational attainment, age at first sexual intercourse, and ideal number of children in the three observed years. The expected risk of having one birth among those with lower secondary or less is about two times higher and the expected risk of having subsequent births is higher among those with lower secondary or less and with upper secondary. Also, the expected risk of subsequent births is lower for women in high and medium SES.

[TABLE 3]

Conclusion

Women with more than one birth during adolescence are more likely to be less educated, having had an early sexual debut and a greater ideal number of children. In Mexico, adolescent women who had a birth have already been in contact with the health system and many of them get access to health services via *Seguro Popular*. A greater proportion of women with subsequent births are using LARCs compared with those with only one birth. It is important to provide contraceptive counseling that takes into account the desired number of children but also that informs women about the importance of avoiding another pregnancy in adolescence.

Table 1a. Socio-demographic and sexual characteristics of women aged 20-24 by condition of having no births, one births or subsequent births during adolescence, Mexico 2006

	No births		One birth		Subsequent births		p-value
	%	CI 95%	%	CI 95%	%	CI 95%	
Marital/Cohabitation status							
Never married/cohabiting	15.9	[12.4, 20.2]	15.7	[9.9, 24.1]	4.4	[2.3, 8.4]	0.013
Ever married/cohabiting	84.1	[79.8, 87.6]	84.3	[75.9, 90.1]	95.6	[91.6, 97.7]	
Educational attainment							
Lower secondary or less	23.5	[19.4, 28.2]	33.6	[29.0, 38.6]	52.0	[45.1, 58.8]	0.000
Upper secondary	36.7	[31.6, 41.9]	41.0	[35.9, 46.3]	37.2	[31.3, 43.5]	
Tertiary	39.8	[34.9, 45.0]	25.4	[19.5, 32.4]	10.8	[7.1, 16.2]	
Mean age at first intercourse	18.7	[18.5, 18.9]	16.6	[16.5, 16.8]	15.4	[15.2, 15.6]	0.000
Contraceptive knowledge							
Low	65.0	[60.0, 69.6]	65.0	[58.6, 70.9]	69.9	[63.1, 75.9]	0.795
Medium	30.9	[26.4, 35.8]	31.2	[25.3, 37.8]	27.4	[21.7, 34.0]	
High	4.2	[2.8, 6.3]	3.8	[2.4, 5.8]	2.7	[0.8, 8.7]	
Current contraceptive method							
None	26.4	[21.2, 32.3]	31.6	[26.5, 37.3]	29.8	[22.9, 37.8]	0.004
Less effective methods	8.7	[6.1, 12.3]	5.5	[3.8, 7.8]	4.6	[2.2, 9.5]	
Hormonal or condoms	19.0	[14.8, 24.0]	19.7	[12.9, 29.1]	12.2	[8.4, 17.2]	
LARC	41.1	[35.0, 47.4]	31.6	[29.9, 40.4]	36.2	[29.9, 43.1]	
Sterilization	4.9	[2.7, 8.5]	8.2	[5.9, 11.3]	17.2	[11.7, 24.5]	
Mean ideal number of children	2.3	[2.2, 2.4]	2.4	[2.3, 2.5]	2.8	[2.7, 2.9]	0.000
Health services							
IMSS	33.9	[29.3, 38.9]	28.2	[24.0, 32.9]	19.9	[15.3, 25.4]	0.007
ISSSTE o ISSSTE Estatal	1.4	[0.8, 2.5]	1.2	[0.6, 2.5]	0.5	[0.2, 1.8]	
Pemex, Army or Navy	1.4	[0.6, 3.0]	0.2	[0.04, 0.8]	0.7	[0.2, 2.8]	
Seguro Popular	9.8	[7.3, 13.0]	28.2	[5.8, 10.2]	10.0	[7.2, 13.7]	
Private insurance	1.3	[0.4, 4.4]	1.2	[0.6, 2.3]	0.8	[0.2, 3.3]	
Other	1.6	[0.7, 3.4]	1.8	[1.0, 3.5]	1.3	[0.5, 3.0]	
None	50.7	[45.3, 56.0]	59.7	[54.5, 64.7]	66.9	[60.6, 72.6]	
Socioeconomic status							
Low	22.2	[17.9, 27.2]	27.9	[23.4, 32.9]	33.9	[27.3, 41.3]	0.089
Medium Low	54.3	[48.5, 60.0]	50.8	[44.9,56.7]	53.2	[45.5, 60.7]	
Medium High	20.0	[15.5, 25.5]	16.0	[12.8, 19.8]	12.4	[8.4, 17.8]	
High	3.5	[1.8, 6.5]	5.3	[1.4, 18.5]	0.6	[0.2, 1.7]	
Area of residency							
Rural	23.6	[19.3, 28.4]	25.7	[21.3, 30.7]	33.6	[27.3, 40.4]	0.022
Urban	76.4	[71.6, 80.7]	74.3	[69.3, 78.7]	66.4	[59.6, 72.7]	

Table 1b. Socio-demographic and sexual characteristics of women aged 20-24 by condition of having no births, one births or subsequent births during adolescence, Mexico 2009

	No births		One birth		Subsequent births		p-value
	%	CI 95%	%	CI 95%	%	CI 95%	
Marital/Cohabitation status							
Never married/cohabiting	71.3	[69.7, 72.8]	11.8	[10.1, 13.7]	6.6	[4.5, 9.6]	0.000
Ever married/cohabiting	28.8	[27.2, 30.4]	88.2	[86.4, 89.9]	93.4	[90.4, 95.5]	
Educational attainment							
Lower secondary or less	31.3	[29.7, 32.9]	68.5	[65.6, 71.2]	85.5	[81.8, 88.5]	0.000
Upper secondary	30.3	[28.8, 31.8]	26.1	[23.6, 28.7]	14.0	[11.0, 17.6]	
Tertiary	38.4	[36.7, 40.1]	5.4	[4.3, 6.8]	0.5	[0.2, 1.3]	
Mean age at first intercourse	18.8	[18.7, 18.9]	16.7	[16.6, 16.8]	15.5	[15.4, 15.6]	0.000
Contraceptive knowledge							
Low	12.0	[11.0, 13.1]	16.0	[13.7, 18.5]	22.7	[18.5, 27.5]	0.000
Medium	56.9	[55.2,58.5]	63.1	[60.1, 66.0]	65.7	[60.8, 70.3]	
High	31.1	[29.5, 32.7]	21.0	[18.4, 23.8]	11.6	[9.1, 14.8]	
Current contraceptive method							
None	35.0	[32.6, 37.5]	27.5	[24.7, 30.4]	20.3	[16.9, 24.2]	0.000
Less effective methods	5.2	[4.1, 6.5]	5.8	[4.4, 7.6]	4.1	[2.8, 6.0]	
Hormonal or condoms	34.9	[32.5, 37.3]	19.0	[16.7, 21.6]	17.9	[14.3, 22.2]	
LARC	23.2	[20.8, 25.7]	27.5	[39.1, 45.8]	41.0	[36.1, 46.2]	
Sterilization	1.8	[1.2, 2.6]	5.3	[4.2, 6.8]	16.7	[13.5, 20.5]	
Mean ideal number of children	2.3	[2.2, 2.4]	2.5	[2.4, 2.5]	2.9	[2.8, 3.0]	0.000
Health services							
IMSS	30.2	[28.8, 31.7]	25.5	[23.0, 28.2]	16.2	[13.5, 19.4]	0.000
ISSSTE o ISSSTE Estatal	6.3	[5.5, 7.1]	2.3	[1.4, 3.6]	1.5	[0.8, 3.0]	
Pemex, Army or Navy	0.7	[0.5, 1.0]	0.9	[0.4, 2.5]	0.3	[0.1, 1.1]	
Seguro Popular	13.1	[12.0, 14.1]	25.5	[24.4, 29.4]	31.9	[28.0, 36.1]	
Private insurance	3.1	[2.6, 3.7]	1.2	[0.7, 2.2]	0.7	[0.3, 1.8]	
Other	1.5	[1.1, 2.0]	1.0	[0.6, 1.6]	0.8	[0.4, 1.8]	
None	45.1	[43.4, 46.8]	42.2	[39.3, 45.2]	48.5	[43.9, 53.2]	
Area of residency							
Rural	18.9	[17.8, 20.1]	24.9	[22.5, 27.5]	30.8	[26.8, 35.2]	0.000
Urban	81.1	[79.9, 82.2]	75.1	[72.5, 77.5]	69.2	[64.8, 73.3]	

ENADID 2009 did not include the SES variable

Table 1c. Socio-demographic and sexual characteristics of women aged 20-24 by condition of having no births, one births or subsequent births during adolescence, Mexico 2014

	No births		One birth		Subsequent births		p-value
	%	CI 95%	%	CI 95%	%	CI 95%	
Marital/Cohabitation status							
Never married/cohabiting	68.1	[66.7, 69.5]	13.0	[11.4, 14.7]	7.3	[5.2, 10.1]	0.000
Ever married/cohabiting	31.9	[30.5, 33.3]	87.0	[85.3, 88.6]	92.7	[89.9, 94.8]	
Educational attainment							
Lower secondary or less	25.4	[24.1, 26.7]	59.6	[57.1, 62.0]	81.7	[78.0, 84.9]	0.000
Upper secondary	30.7	[29.3,32.2]	31.8	[29.6, 34.1]	15.7	[12.7, 19.1]	
Tertiary	43.9	[42.4, 45.4]	8.6	[7.3, 10.1]	2.6	[1.4, 4.8]	
Mean age at first intercourse	18.5	[18.5, 18.6]	16.5	[16.4, 16.6]	15.4	[15.3, 15.5]	0.000
Contraceptive knowledge							
Low	13.8	[12.9, 14.8]	13.1	[11.6, 14.8]	17.5	[14.8, 20.6]	0.000
Medium	58.9	[57.4, 60.4]	69.7	[67.4, 71.9]	67.8	[63.7, 71.7]	
High	27.3	[25.8, 28.7]	17.2	[15.3, 19.2]	14.7	[11.6, 18.3]	
Current contraceptive method							
None	39.7	[37.5, 41.9]	28.8	[26.4, 31.3]	23.6	[20.2, 27.4]	0.000
Less effective methods	3.7	[3.0, 4.5]	3.3	[2.5, 4.4]	1.6	[0.7, 3.6]	
Hormonal or condoms	32.1	[30.0, 34.2]	16.2	[14.3, 18.4]	10.6	[8.5, 13.2]	
LARC	23.2	[21.4, 25.2]	28.8	[40.8, 46.1]	43.7	[39.5, 48.0]	
Sterilization	1.4	[1.0, 2.0]	8.2	[6.8, 9.9]	20.4	[17.0, 24.3]	
Mean ideal number of children	2.3	[2.2, 2.3]	2.3	[2.3, 2.4]	2.6	[2.5, 2.7]	0.000
Health services							
IMSS	31.3	[29.9, 32.8]	21.9	[20.0, 23.8]	13.9	[11.5, 16.7]	0.000
ISSSTE o ISSSTE Estatal	4.5	[3.9, 5.2]	1.2	[0.8, 1.9]	1.0	[0.3, 2.9]	
Pemex, Army or Navy	0.7	[0.5, 1.0]	0.6	[0.3, 1.2]	0.6	[0.1, 3.4]	
Seguro Popular	33.2	[31.8, 34.6]	21.9	[55.3, 60.0]	63.0	[58.9, 67.0]	
Private insurance	2.4	[2.0, 3.0]	0.4	[0.2, 0.8]	0.2	[0.04, 0.6]	
IMSS Oportunidades	0.9	[0.7, 1.3]	1.6	[1.1, 2.2]	2.8	[1.8, 4.3]	
Other	0.5	[0.4, 0.8]	0.2	[0.1, 0.5]	0.4	[0.13, 1.6]	
None	26.4	[25.0, 27.8]	16.5	[14.7, 18.4]	18.2	[15.1, 21.7]	
Socioeconomic status							
Low	22.9	[20.7, 25.2]	24.2	[22.5, 26.1]	30.7	[27.2, 34.5]	0.000
Medium Low	53.0	[50.4, 55.6]	57.3	[55.3, 59.4]	54.1	[50.2, 58.0]	
Medium High	19.1	[17.3, 21.1]	15.3	[14.0, 16.8]	13.2	[10.8, 16.1]	
High	5.1	[4.2, 6.1]	24.2	[2.5, 3.9]	1.9	[1.0, 3.5]	
Area of residency							
Rural	24.8	[22.6, 27.2]	26.5	[24.7, 28.4]	33.8	[30.2, 37.7]	0.000
Urban	75.2	[72.8, 77.4]	73.5	[71.6, 75.3]	66.2	[62.4, 69.9]	

Table 2. Logistic regression results: Odds ratios, OR, describing association with having subsequent birth in adolescence compared with having only one birth

	2006		2009		2014	
	OR	**CI 95%**	**OR**	**CI 95%**	**OR**	**CI 95%**
Educational attainment						
Lower secondary or less	1.000		1.000		1.000	
Upper secondary	1.268	[0.72, 2.23]	4.820**	[1.71, 13.55]	1.483	[0.75, 2.93]
Tertiary	1.599	[0.88, 2.91]	6.990***	[2.58, 18.97]	2.747**	[1.42, 5.30]
Age at first intercourse	0.619***	[0.55, 0.70]	0.592***	[0.55, 0.64]	0.620***	[0.57, 0.67]
Ideal number of children	1.367***	[1.16, 1.62]	1.281***	[1.15, 1.43]	1.178***	[1.08, 1.29]
Socioeconomic status						
Low	1.000		--	--	1.000	
Medium Low	1.169	[0.68, 2.02]	--	--	0.914	[0.70, 1.20]
Medium High	1.098	[0.55, 2.21]	--	--	1.032	[0.70, 1.53]
High	0.191	[0.03, 1.31]	--	--	1.016	[0.40, 2.60]
Area of residency						
Rural	1.000		1.000		1.000	
Urban	0.867	[0.5, 1.5]	0.922	[0.7, 1.22]	0.852	[0.65, 1.12]
Constant	306.10***	[41.19, 2274.64]	152.002***	[27.31, 845.98]	265.194***	[59.68, 1178.34]

* $p<0.05$ ** $p<0.01$ *** $p<0.001$

Table 3. Multinomial logistic regression results: Relative Risk Ratios, RRR, describing association with having subsequent birth or having only one birth compared with having no births in adolescence

	2006		2009		2014	
	RRR	**CI 95%**	**RRR**	**CI 95%**	**RRR**	**CI 95%**
One birth						
Educational attainment						
Lower secondary or less	1.000		1.000		1.000	
Upper secondary	1.345	[0.91, 1.98]	2.300***	[1.57, 3.36]	1.842***	[1.38, 2.46]
Tertiary	1.276	[0.84, 1.94]	2.826***	[1.94, 4.12]	2.148***	[1.60, 2.88]
Age at first intercourse	0.458***	[0.40, 0.53]	0.490***	[0.45, 0.53]	0.460***	[0.43, 0.50]
Ideal number of children	1.094	[0.92, 1.30]	1.028	[0.93, 1.14]	1.022	[0.93, 1.12]
Socioeconomic status						
Low	1.000		--		1.000	
Medium Low	0.559**	[0.38, 0.82]	--	--	0.948	[0.73, 1.23]
Medium High	0.487*	[0.28, 0.85]	--	--	0.656*	[0.46, 0.93]
High	1.039	[0.37, 2.93]	--	--	0.640	[0.38, 1.09]
Area of residency						
Rural	1.000		1.000		1.000	
Urban	1.145	[0.80, 1.63]	0.947	[0.75, 1.19]	0.891	[0.69, 1.15]
Subsequent birth						
Educational attainment						
Lower secondary or less	1.000		1.000		1.000	
Upper secondary	1.758	[0.95, 3.26]	12.226***	[4.12, 36.29]	2.743**	[1.36, 5.51]
Tertiary	2.117*	[1.09, 4.11]	23.170***	[8.14, 65.93]	6.008***	[3.08, 11.74]
Age at first intercourse	0.307***	[0.25, 0.37]	0.318***	[0.28, 0.36]	0.303***	[0.27, 0.34]
Ideal number of children	1.502***	[1.21, 1.86]	1.292***	[1.12, 1.49]	1.198**	[1.07, 1.34]
Socioeconomic status						
Low	1.000		--		1.000	
Medium Low	0.638	[0.36, 1.14]	--	--	0.871	[0.63, 1.2]
Medium High	0.477	[0.21, 1.06]	--	--	0.670	[0.43, 1.06]

High	0.211	[0.04, 1.03]	--	--	0.643	[0.22, 1.92]
Area of residency						
Rural	1.000		1.000		1.000	
Urban	0.984	[0.57, 1.71]	0.875	[0.63, 1.22]	0.748	[0.54, 1.03]

* $p<0.05$ ** $p<0.01$ *** $p<0.001$

ENADID 2009 does not include the SES variable

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